



Wikipedia to enhance student communication skills

Wednesday 11 September 2024

Welcome and introductions

- Dr Katelyn Mroczek, Lecturer in Microbiology, La Trobe University
- Dr Thiru Vanniasinkam, Associate Professor and Program Director, Charles Sturt University
- Dr Brian McSharry, Lecturer in Virology, Charles Sturt University
- Belinda Spry and Pru Mitchell from Wikimedia Australia

Program for the session

Time	Content	Who
10:00 am	Welcome	Belinda
10:10 am	An introduction to the project	Thiru
10:20 am	Katelyn's experience at La Trobe - The assessment	Katelyn
10:40 am	Reading Wikipedia	Belinda & Pru
11:00 am	Activity: Designing an assessment item	All
11:40 am	Highlights	Thiru
11:55 am	Conclusion	Belinda

AIMS

In this workshop

- Discuss benefits of using Wikimedia based activities in the classroom
- Participants will develop authentic activities that enhance students' communication skills for their courses
- Adapt a rubric for assessing the activity
- Learn how Wikimedia can support the development of these activities/assessments

Background

What we are doing?

- La Trobe and Charles Sturt collaborating on project: Enhancing communication skills in science

Why is this important?

- Communication skills are key to science graduates especially post pandemic
 - Communicate with other scientists
 - Communicate with non-scientists/lay public

How?

- Collaboration with Wikimedia
 - Develop an activity
 - Related assessment item

Examples of publications showing importance of communication

1. Matta, G. (2020). Science communication as a preventative tool in the COVID19 pandemic. *Humanit Soc Sci Commun* 7, 159.
<https://doi.org/10.1057/s41599-020-00645-1>
2. Parker, L., Byrne, J. A., Goldwater, M., & Enfield, N. (2021). Misinformation: an empirical study with scientists and communicators during the COVID-19 pandemic. *BMJ Open Science*, 5(1),e100188.
<https://doi.org/10.1136/bmjos-2021-100188>
3. Mercer-Mapstone, L. D., & Kuchel, L. J. (2016). Integrating communication skills into undergraduate science degrees: A practical and evidence-based approach. *Teaching and Learning Inquiry*, 4(2):122-35.
<https://doi.org/10.20343/teachlearningu.4.2.11>



Harnessing Wikipedia for Science communication and collaboration

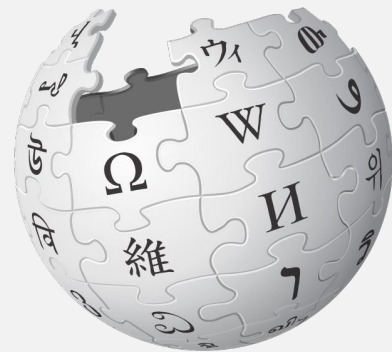
Dr Katelyn Mroczek
La Trobe University

The project

- **Science communication is be a key skill in STEM curriculum**
 - Communicating complex topics effectively
- **Wikipedia is a collaborative open access encyclopedia**
 - First point of reference for many people
 - Source of information on many topics for the wider community

An assessment to improve science communication

- Collaboration
- Critical thinking



WIKIPEDIA
The Free Encyclopedia

Project description

- Students would analyse Wikipedia articles for readability for a general audience, accuracy and currency
- **In collaboration with Wikimedia Australia**
 - Topics were chosen in immunology
 - All topics that were covered in content
- Students picked their own groups (4 students per group)
 - Those that did not were assigned to a group



Introductory session by Belinda Spry from Wikimedia

- Belinda and Alice came to an online zoom
- Introduction into Wikipedia
- Used an example to show:
 - Various sections
 - References
 - Lacking details
 - Using independent sources
 - How to make an account
 - How to edit

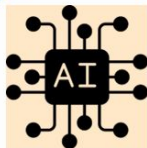


The Assignment



Wikipedia article evaluation

- Students choose article
- Evaluate using provided rubric
- Provide comments on article by annotating
- Suggestions for improvement



Generate AI article on topic and evaluate

- Each student generated an AI article on the same topic
- Picked one article to evaluate
- Evaluated using provided rubric



Report

- Comparison of AI-generated and Wikipedia articles
- Recommendations for improving the Wikipedia content
- Reflections on the importance of information literacy and science communication

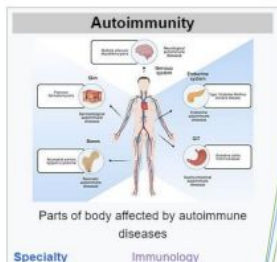


Self and Peer evaluation

- Students assessed their contribution compared with others in their group

Autoimmunity

In immunology, autoimmunity is the system of immune responses of an organism against its own healthy cells, tissues and other normal body constituents. [1][2] Any disease resulting from this type of immune response is termed an "autoimmune disease". Prominent examples include celiac disease, diabetes mellitus type 1, Henoch–Schönlein purpura (HSP), systemic lupus erythematosus (SLE), Sjögren syndrome, eosinophilic granulomatosis with polyangiitis, Hashimoto's thyroiditis, Graves' disease, idiopathic thrombocytopenic purpura, Addison's disease, rheumatoid arthritis (RA), ankylosing spondylitis, polymyositis (PM), dermatomyositis (DM), and multiple sclerosis (MS). Autoimmune diseases are very often treated with steroids. [3]



Autoimmunity means presence of antibodies or T cells that react with self-protein and is present in all individuals, even in normal health state. It causes autoimmune diseases if self-reactivity can lead to tissue damage. [4]

History

In the later 19th century it was believed that the immune system was unable to react against the body's own tissues. Paul Ehrlich, at the turn of the 20th century, proposed the concept of *horror autotoxicus*. Ehrlich later adjusted his theory to recognize the possibility of autoimmune tissue attacks, but believed certain innate protection mechanisms would prevent the autoimmune response from becoming pathological. In 1904 this theory was challenged by the discovery of a substance in the serum of patients with paroxysmal cold hemoglobinuria that reacted with red blood cells. During the following decades, a number of conditions could be linked to autoimmune responses. However, the authoritative status of Ehrlich's postulate hampered the understanding of these findings. Immunology became a biochemical rather than a clinical discipline. [5] By the 1950s the modern understanding of autoantibodies and autoimmune diseases started to spread. More recently it has become accepted that autoimmune responses are an integral part of vertebrate immune systems (sometimes

Commented [GU1]: very confusing and poorly written introduction that doesn't really tell you much information or clarify anything, you should be able to have a basic understanding from the intro

Commented [GU2]: too many examples and alot that aren't commonly known

Commented [ZW3]: Here Diabetes, Athritis, MS, and Lupus would be enough well known examples

Commented [GU4]: Many other treatments exist - would be worth mentioning some and not give the impression that steroids are a one-stop treatment.

Commented [GU5]: Innate immune cells also implicated in some autoimmunity - not just adaptive immune cells.

Commented [MW6]: The grammar and language that is in this sentence is hard to read or is just not required.

Commented [GU7]: healthy individuals might be better, interesting wording

Commented [GU8]: Tissue damage is not the only type of damage caused by autoimmune diseases.

Commented [ZW9]: This whole paragraph should be made far more accessible to people without a science background

Commented [MW10]: 'In the later' would be better pronounced as 'in the late'

Commented [GU11]: 1800's as to not confuse people that its the 1900's

Commented [GU12]: horror self toxic latin term basically saying the concept of autoimmune diseases before they were known to exist

Commented [ZW13]: needs to explain the issues with the original theory

Commented [GU14]: Very nature of immunity is that it is pathological.

Commented [GU15]: What was this substance? What is the significance of this?

Commented [ZW16]: This process needs a more accessible explanation

Commented [ZW17]: for grammar this should say 'over' not 'during'

Commented [ZW18]: this needs a bit of an explanation

Commented [GU19]: It is still kind of both - immunology is a multifaceted discipline, is still both a molecular and medical discipline.

EXAMPLE

- Students copied their article into Word or similar
- Used track changes to make annotations
- Could see individual contributions

The rubric students used to evaluate their articles

- Content information provided in article
- Language Understandability
- Value of images/figures
- Overall organisation
- Identification of any gaps
- Relevance and currency of references
- Cultural inclusivity and representation (if applicable)

WIKIPEDIA ARTICLE CRITERIA ANALYSIS

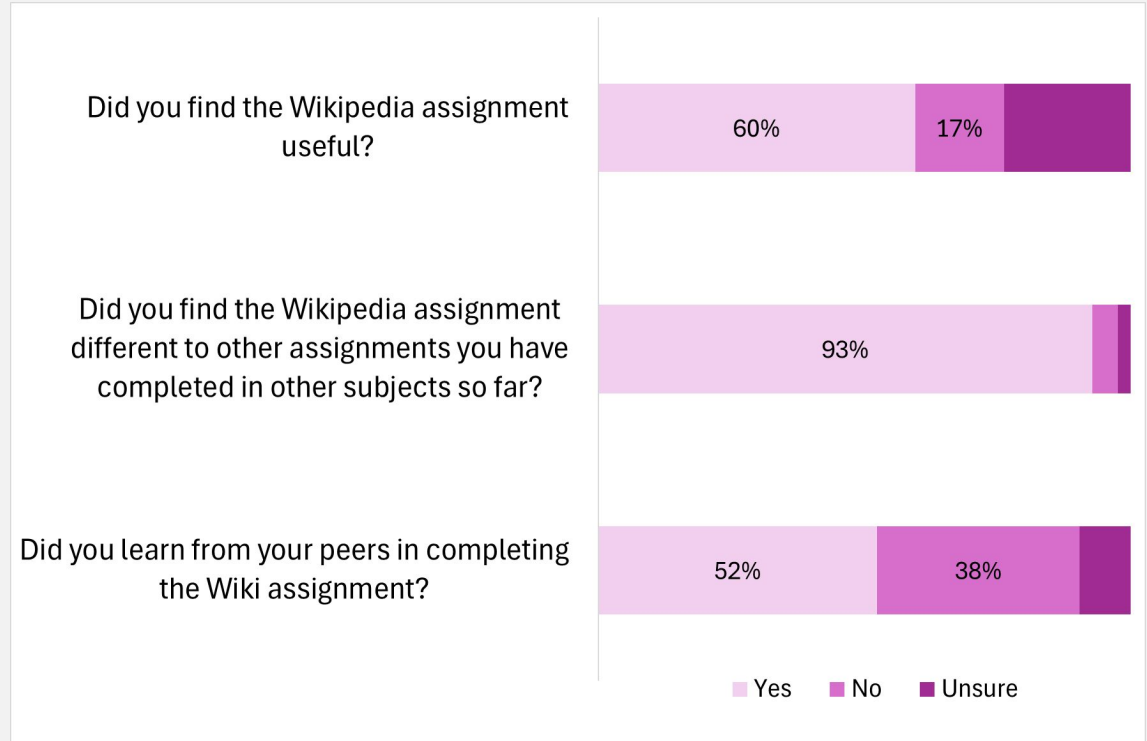
Rubric for assessing Wikipedia and AI-generated articles.

Criteria	Excellent	Good	Satisfactory	Needs Improvement	Unsatisfactory	Any improvements?	Other comments
Content information provided in article	Thorough coverage of immunology topic, accurate information, and comprehensive details	Adequate coverage with accurate information, but some aspects may be lacking.	Basic coverage, may lack depth or miss key points.	Incomplete information or significant inaccuracies.	Lacks essential information, contains major inaccuracies.	More information about the topic however there is a basic coverage and would teach the reader what autoimmunity is.	
Language understandability	Clear, concise language that is easily understood by someone without a science background.	Mostly clear language, but occasional use of jargon or complex terms.	Understandable language, but frequent use of technical terms without sufficient explanation	Poorly explained technical terms, making comprehension difficult.	Incomprehensible language, heavy reliance on technical terms without clarification.	Weakest point of this article. The grammar and language used was confusing and hard to follow.	
Value of Images/Figures	Images enhance understanding, are relevant, and well-captioned.	Images are mostly relevant and contribute to understanding.	Some images, but their relevance or clarity may be lacking.	Images are present but do not add value or are unclear.	No images or visuals, hindering understanding.	Wiki articles contain 2 images however, they could have more and ones that relate to the content. Not just put in to have an image.	
Overall Organization	Logical flow, clear headings, and subheadings that aid navigation.	Generally well-organized but may have some sections that could be better structured	Adequate organization, but structure could be improved for better clarity.	Disorganized, making it challenging to follow the information.	No discernible structure, making the article difficult to navigate.	Generally, has good headings and subheadings however, it was a bit choppy and jumped into some topics. There is not equal weighting between each heading.	

Criteria	Excellent	Good	Satisfactory	Needs Improvement	Unsatisfactory	How can this be improved?	Other comments
Identification of Gaps	No significant gaps; comprehensive coverage.	Minor gaps that do not impact overall understanding.	Some notable gaps, affecting the overall completeness.	Major gaps in information, hindering comprehension.	Critical information is missing, rendering the article incomplete.	Diagnosis paragraph is lacking details and information about testing. The article tends to have a lot of information however it is written in a hard way to understand.	
Relevance and Currency of References:	Recent and relevant references from reputable sources.	Mostly recent and relevant references, with a few outdated sources	A mix of recent and outdated references or references may lack relevance	Predominantly outdated or irrelevant references	No references or sources are unreliable	There is a mix of references from late 80's to mid-2010's, however all the older references are still relevant in the context of autoimmunity.	
Cultural Inclusivity and Representation (if applicable)	Culturally inclusive, diverse perspectives, and representation	Generally inclusive but may have room for improvement	Some effort towards inclusivity but notable gaps	Limited inclusivity, inadequate representation	Lacks any attempt at cultural inclusivity or representation	N/A	

Student survey

- More than half of the students found the assessment useful
- Majority found it different to other assignments
- Half the students learned from their peers



Number of
positive
comments
about what
students
thought was
useful

7

**Understanding Accuracy
and Reliability**

"Was helpful to see that Wikipedia and AI are lacking important information, as well as checking the references on the wiki article."

6

**Fact checking and Bias
Awareness**

"It was helpful to identify the inaccuracies in Wikipedia articles through the annotations."
"Provided an opportunity to fact check and make a well-known website better."

7

**Scientific Language and
Research Skills**

"The assignment was good to gain an understanding of scientific language, and its barriers."
"The assignment allowed me to get different perspectives and tips on research in both Wikipedia and AI tools usage."

5

**Collaboration and Group
Work**

"It was a good experience to observe how other people work together and to try and improve on that and give constructive criticism as a group."
"The structure of it made it really collaborative and it was a more enjoyable assignment."

5

**General Interest and
Engagement**

"The assignment was good because it was different to usual assessments we have but was still really informative and helped us build knowledge around not only Wikipedia use and editing but on our chosen topic."

Number of
comments
from
students
that didn't
find it as
useful

5

Relevance to Course
Material

"It didn't seem super relevant to bacteriology but it was useful for understanding how Wikipedia works."
"I didn't think it assessed anything to do with the subject itself."
"It didn't feel relevant to course material."

5

Assessment Format and
Execution

"There was a lot to read and it was difficult to comment on the different areas that had to be amended."
"Didn't like the format of the assessment."

4

Perceived redundancy

"I think it highlighted the importance of Wikipedia and critical thinking about writing but I don't think it helped much beyond that."
"I think it was slightly unnecessary as I feel most students have a good grasp of how to effectively use a Wikipedia article for assessments."

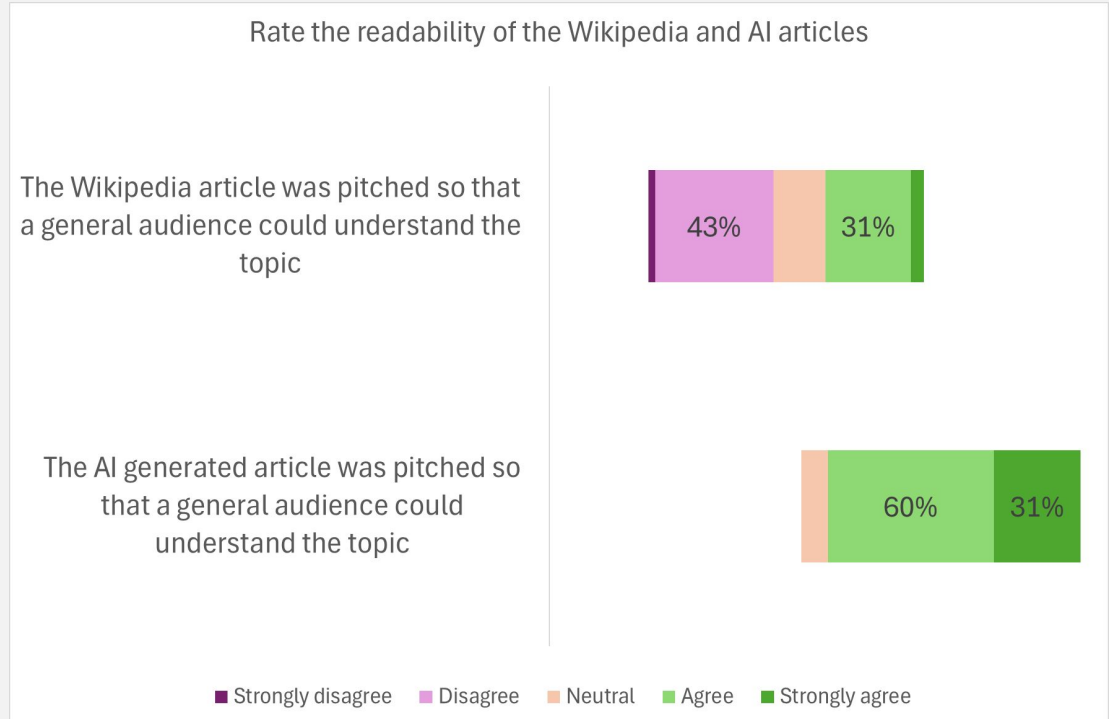
3

Personal Disinterest

"Just was a bit boring personally."
"I didn't really care all that much."

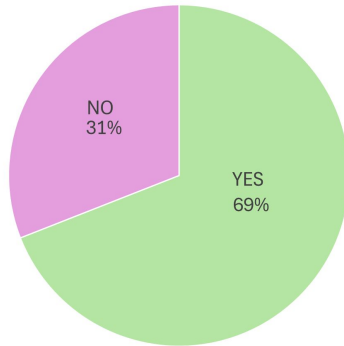
Readability

- 45% of students thought the Wikipedia article may be too advanced for the average reader
- 91% of students agreed that the AI generated article was pitched for a general audience

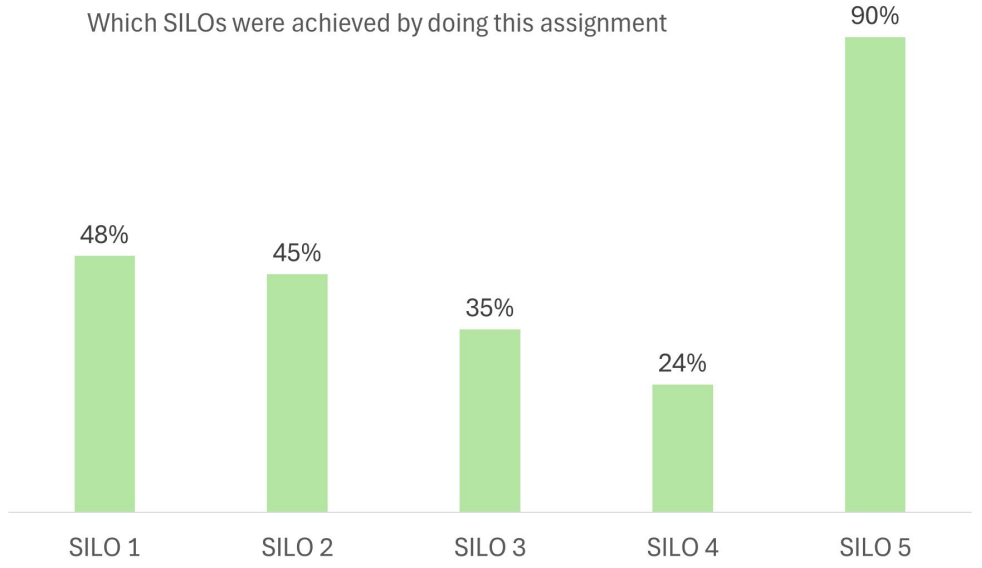


Did students meet SILO?

Did performing this assessment help you achieve the subject's learning outcomes?



Which SILOs were achieved by doing this assignment



SILO 1	Examine and apply examples of the mechanisms that enable the immune system to be generated and respond to pathogens and how an ineffective immune response can result in disease and chronic infections.
SILO 2	Analyse and provide illustrative examples of molecular mechanisms used by pathogenic bacteria to successfully infect their hosts, avoid immune clearance, induce pathology and cause chronic infection.
SILO 3	Apply the principles of bacterial pathogenesis to analyse and solve real world scenarios.
SILO 4	Demonstrate proficiency in the application of key microbiological and immunological techniques, both in theory and in practical laboratory settings.
SILO 5	Evaluate and critique immunology related articles as part of a team for their suitability in communicating complex topics to a general audience.

**Number of
comments
about
skills
learned**

8

**Research and Editing
Skills**

"How to annotate effectively and identify different types of issues in the articles. We had different group members identifying different things that maybe other members wouldn't have picked up on which was helpful."

9

**Critical Thinking and
Analysis**

"Critical thinking skills, Attention-to-detail and most importantly communication skills as we need to discuss about the articles as a group and be able to write out our thoughts and suggestions."

"Critical thinking about sources of information."

19

**Understanding Wikipedia
and AI**

"Learning about Wikipedia in general and how to evaluate it and edit it, how to evaluate sources and also just general knowledge about our article topic, also collaborative skills."

"Comparison and deeper understanding of AI."

6

**Communication and
Teamwork**

"Skills in presenting information about science related topics that are often complex."

"Learnt some new teamwork skills and tools. Learnt how to be more critical of online sources."

"Communication with my group."

Final Thoughts

- **Annotate feature worked well**
- **Small amount of students disliked the assignment / found it irrelevant**
 - Need to make more of an emphasis on science communication
 - Not just about the subject content - communicating scientific knowledge
- **This was mainly completed online**
 - Next year the workshops will be face to face
- **Didn't specify which AI tool to use**
 - Might be good for all students to use the same (at the time)
- **Peer evaluation is necessary**
 - Most groups worked well but as always there were some issues
- **Would I do it again? Yes**



Questions





Reading and using Wikipedia

Belinda Spry
Wikimedia Australia

How to read a Wikipedia article



WIKIPEDIA
The Free Encyclopedia

What is Wikipedia?



Wikipedia is an online encyclopedia



Wikipedia has a neutral point of view



Wikipedia is free content



Wikipedians should interact in a respectful and civil manner



Wikipedia does not have firm rules

How to read a Wikipedia article

Screen share Wikipedia: Selective immunoglobulin A deficiency

General

- Section headings - are these logical? Gaps?
- Links - blue and red, see also, external links
- References and citations
- Infobox

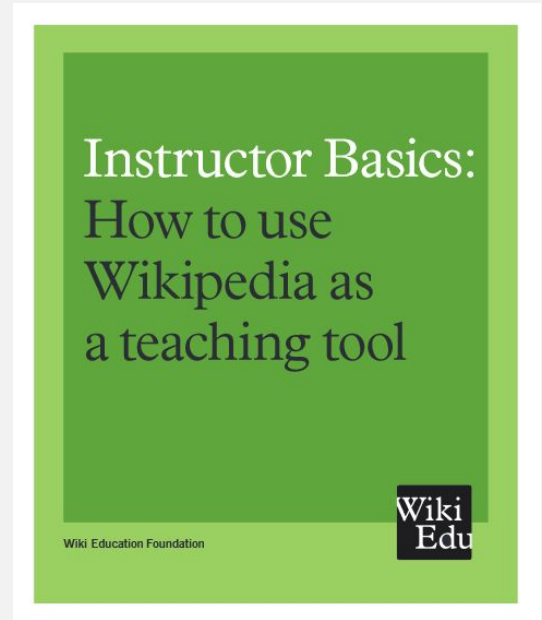
Menus

- Talk - [content assessment](#), topic projects, questions & discussion
- Languages
- View History
- Edit

Using Wikipedia in assignments

Learning outcomes?

- Communication or translation skills
- Critical thinking
- Research and referencing skills
- Collaboration
- Media and information literacy
- Writing skills



How to get started

- Set out with support
- [Review the literature](#)
- Fit your own mask first
 -
 - [Learning Wikipedia on Open edX](#)
 - [Wikipedia training on YouTube](#)
 - [Teaching with Wikipedia](#) Match your task to time available
- [Consider content assessment criteria](#)
- Share your findings

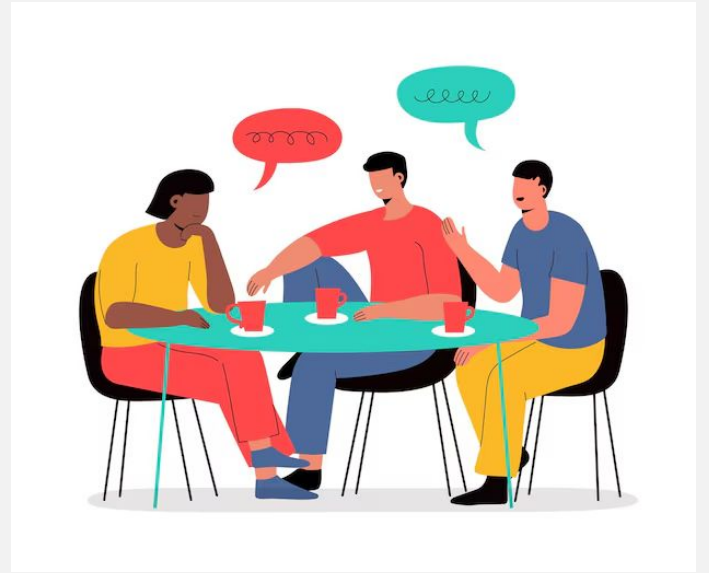
ACTIVITY instructions

In your group the Facilitator will introduce the activity.

- Complete activity via [Google Doc template](#)
 - Identify a topic related to your own teaching
 - Identify related Wikipedia articles
 - Draft an activity and assignment
 - Modify Rubric to suit your activity

Reporting back

Key points, highlights and burning questions



What's next?

Buddy?
Community of Practice?



Close and evaluation form

Evaluation form in Google forms:

<https://forms.gle/iM5FvmDeqVt5AYNdA>

No contact details will be collected.

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Thanks and contact details

- Dr Katelyn Mroczek, Lecturer in Microbiology, La Trobe University
- Dr Thiru Vanniasinkam, Associate Professor and Program Director, Charles Sturt University
- Dr Brian McSharry, Lecturer in Virology, Charles Sturt University
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